WINEMAKING DOMAIN WASTELESS TECHNOLOGIES APPLICATION

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Abstract: The presented research brings an analysis of grape vines technological processing wastes nutritive and energetic value. It shows recommendation about optimal use of those to achieve a wasteless production process.

Keywords: grape seeds, nutritive value, energetic value, separation, drying.

Besides basic products, wine and fermented grape juice, grapes processing and wines conditioning, results significant quantities of other products, grouped under the generic name of secondary products or sub-products. The share of winemaking sub-products exceeds 18 – 20% of the total quantity of the processed grapes. In our country, from 1 million tons of grapes used in wine production, besides wine, one obtains 120000 tons of marc without bunch and 400000 hectoliters of yeasts. From one ton of grapes, if rationally valued the sub-products resulting from primary winery, besides wine are: 1.2 t of tartaric acid, 180 kg of marc and 4.5 kg of yeasts. By processing the marc and the yeasts results 8.8 liters of absolute alcohol, i.e. 22 liters of 40% vol. yeasts brandy.

The presented paperwork reflects wastes obtained after technological grapes processing revaluation study, namely their energetic and nutritive value. Wastes processing process itself consist in: row material transportation from the production facility to collecting point, their downloading to the bunker, next comes the transportation to the vibrating-separator where in the moist phase begins seeds from marc separation. Next the seeds are transported to dryers where happens the drying itself. The grape marc is collected in a bunker and transported to the zootechnic sector as supplement for livestock nutrition. After drying the seeds are repeatedly separated from the remaining marc. The remaining dried marc could be successfully used as livestock nutriment as well as renewable energy source. For a better use of the remaining dried marc we studied the both chemical composition and caloric energy. The obtained dried wastes could be processed into fodder flour. After separating the grapes seeds from the marc, the remaining rests are dried and as lighter fraction are grinded to fodder flour. Conforming to organoleptic indices, it shouldn't have mold traces; the color should be brown, to have a pleasant flavor of marc.

The chemical composition of that flour is indicated in Table 1 through the next indices (in %, recalculated in absolute dried substance) [4]:

Table 1. The chemical composition of the flour

Nr.	Indices name	Quantity, %
1.	*Brute protein*	*10,65*
2.	*Coagulated protein*	*1,58*
3.	*Cellulose*	*18,66*
4.	*Fats*	*4,47*
5.	*No nitrogen extracted substances*	*59,85*
6.	*Calcium*	*1,06*
7.	*Cinders*	*5,89*
8.	*Potassium*	*1,29*
9.	*Phosphor*	*0,22*

In order to use those wastes as biomass one studied and compared their caloric energy with the one of other such products received from biomass. As we can find from Table 2, thanks to rich in oils grapes seeds, the caloric energy bypasses some biomass products as timber, that has 2000 kcal/kg, but as well it's lower than caloric energy of wood, corn, sunflower, etc. [5]

Table 2. Caloric energy of different combustibles.

Nr.	Combustible type	Caloric energy, *kcal/kg*	Equivalent, *kW*
1.	*Diesel*	8250	9,6
2.	*Sunflower*	7500	8,8
3.	*Corn*	6000	6,9
4.	*Pellets*	4500	5,2
5.	*Wood*	3500	4
6.	*No seeds marc*	2000	2,5
7.	*Sawdust*	3000	3,5
8.	*Timber*	1800	2,1
9.	*Grape seeds*	4500	5,2
10.	*Plums seeds*	4200	4,9

Conclusion:

After a comparative analysis we ascertained that the obtained wastes after dry grapes seed separation holds some caloric energy, but not sufficient to assure the necessary energy for grapes seeds drying. But thanks to its chemical composition and nutritive values it presents interest for the zootechnic sphere as livestock fodder.

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